

Mountain precipitation during March was generally 10 to 30 percent below average over most of the state. Snowpack percentages declined a little from the previous month and are generally near average across the northern part of the state, the central mountain ranges and the northern part of the Bighorn Mountains. The southern part of Montana has below average snowpacks with well below average snow in the southwest corner. In general, the higher elevations have better snowpack percentages than the lower elevations. Some melt occurred at the lower elevations in March. Most irrigation reservoirs have near to above average storage but some in the southwest and central areas have below average levels. Streams in the northern areas are forecast to have near to a little above average spring and summer runoff. Percentages drop toward the south with most streams expected to produce runoff in the 80 to 90 percent of average range. Southwest drainages are forecast much lower in the 65 to 70 percent of average range. Surface Water Supply Index (SWSI) vary from +2.8 for the Marias River Basin to -3.1 for the Beaverhead River Basin. Many of the basins have SWSI's in the -1.5 to +1.5 range.

PRECIPITATION

All areas in Montana received less than average mountain precipitation in March. The Bitterroot, Lower Clark Fork, Madison, San Juan-Marias, and Upper Yellowstone River basins received only 55 to 65 percent of average moisture. The Eastern and Gallatin River basins received about 70 percent of average precipitation. The Flathead, Upper Clark Fork, Jefferson, Smith-Ridgely-Musselshell, St. Mary-Rock and Lower Yellowstone River basins had 80 to 90 percent of average moisture. The Missouri Main Stem Basin was nearest average with 95 percent of average March precipitation. Some stations in the Bear Paw Mountains reported near to above average March moisture.

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SNOWPACK

April 1 snowpack conditions show a slight decrease from that reported near March 1, but remain good to excellent over much of the state. Only extreme southwestern Montana has poor snowpack for April 1. Higher elevations still show better snowpack percentages than do lower elevations. West of the Divide, snowpacks range from 80 to 90 percent of average in the Bitterroot, Blackfoot, Upper and Lower Clark Fork River Basins to about 110 percent on the North Fork Flathead. The Kootenai and Flathead Basins generally report near to slightly above average snowpack. East of the Divide, snowpacks are generally near to slightly above average in northern and central Montana and slightly below to well below in the south-central and southwestern areas. The St. Mary, Milk, Sun, Teton, Marias, Judith and Musselshell River drainages all have near to slightly above average snowpacks ranging from about 95 to 110 percent of average. Above to well above snowpack conditions are found in the Snowy Mountains near Lewistown. In contrast, the Big Hole, Beaverhead, Ruby and Madison drainages all report below average snow ranging from about 75 to 80 percent of average. Areas in the headwaters of the Red Rock River drainage report snowpacks that are only about 50 percent of average. The Gallatin, Shields and Upper Yellowstone River Basins report between 80 to 90 percent of average snowpack. Mountain ranges in Northern Wyoming feeding the Bighorn, Little Bighorn, Tongue and Powder Rivers all show near to slightly above average snowpacks ranging from about 95 to 110 percent.

PRECIPITATION

All areas in Montana received less than average mountain precipitation in March. The Bitterroot, Lower Clark Fork, Madison, Sun-Teton-Marias, and Upper Yellowstone River basins received only 55 to 65 percent of average moisture. The Kootenai and Gallatin River basins received about 70 percent of average precipitation. The Flathead, Upper Clark Fork, Jefferson, Smith-Judith-Musselshell, St. Mary-Milk and Lower Yellowstone River basins had 80 to 90 percent of average moisture. The Missouri Main Stem Basin was nearest average with 93 percent of average March precipitation. Some stations in the Bear Paw Mountains reported near to above average March moisture.

RESERVOIRS

Most irrigation reservoirs west of the Divide show above average storage. Major multipurpose reservoirs vary from below average storage in Lake Koocanusa to above average storage in Flathead Lake. East of the Divide, irrigation storage is below average in Clark Canyon, Lima, Deadman's Basin, Bair and Smith River reservoirs. A few have near average storage but most others have above average water levels. Most larger multipurpose projects, east of the Divide, have below average storage. All irrigation reservoirs should fill with spring runoff with the exception of Lima, Clark Canyon and Deadman's Basin Reservoirs.

STREAMFLOW

The Flathead and Kootenai River drainages are forecast to have near to a little above average runoff this spring and summer. Most southern watersheds, west of the Divide, will have 70 to 85 percent of average streamflow. Snow at the higher elevations is a little better than at lower elevations and irrigation water supplies should hold up into July in most drainages. East of the Divide, streams in southwest Montana are expected to have 65 to 70 percent of average runoff. Most drainages in southern watersheds should expect 80 to 90 percent of average streamflows. Northern watersheds can generally expect near to a little above average runoff. The Little Bighorn and Tongue Rivers, draining from the north end of the Bighorn Mountains, should have above average runoff.

SOIL MOISTURE

Soil moisture under the snowpack is generally near to a little above average in the northern part of the state, near to a little below average in central and southcentral drainages and below average in the south west areas. Some low elevation melt increased soil moisture in the foothill areas. However, below average precipitation and warm weather is drying some valley soils.

SURFACE WATER SUPPLY INDEX

The Soil Conservation Service has implemented a program to calculate a Surface Water Supply Index (SWSI) for various basins in Montana. SWSI is a measure of available surface water supplies during spring and summer months. The index ranges from -4.0 to +4.0. A SWSI of -4.0 represents an extremely dry situation, 0 is a near normal situation and +4.0 represents an extremely wet situation. The SWSI provides a scale to evaluate various levels of dryness or wetness and provides a means to compare or evaluate conditions across the state. SWSI considers snowpack, mountain precipitation, soil moisture and reservoir storage.

SWSI SCALE

SWSI	DESIGNATION
+3.0 to +4.0	Extremely wet
+2.0 to +3.0	Moderately wet
+1.0 to +2.0	Slightly wet
-1.0 to +1.0	Near average
-1.0 to -2.0	Slightly dry
-2.0 to -3.0	Moderately dry
-3.0 to -4.0	Extremely dry

Currently, SWSI has been developed for the following drainages. This list will expand as SWSI's for other basins are developed.

SWSI as of April 1, 1990

SWSI	BASIN
-1.1	Clark Fork River above Blackfoot River
+0.3	Blackfoot River
-0.3	Clark Fork River above Missoula
-1.5	Bitterroot River
-0.7	Clark Fork River below Bitterroot River
-3.1	Beaverhead River
-2.0	Ruby River
-2.2	Big Hole River
-0.3	Boulder River (Jefferson)
-2.2	Jefferson River
-1.6	Madison River
-1.5	Gallatin River
-1.8	Missouri River above Canyon Ferry
+1.1	Smith River
+2.7	Sun River
+2.8	Marias River
+0.1	Musselshell River
+1.5	Milk River
-1.3	Yellowstone River above Livingston
-0.7	Shields River
-0.8	Boulder River (Yellowstone)
-0.1	Stillwater River (Yellowstone)
-1.1	Clarks Fork River
-1.0	Rock-Red Lodge Creek
-1.0	Yellowstone River above Bighorn River
+1.6	Little Bighorn River
+1.1	Tongue River

KOOTENAI RIVER BASIN in Montana

During March, mountain precipitation was about 70 percent of average across the basin. The snowpack is currently about average for the basin but varies from below average in the Fisher to above average in Canada and in the Yaak River headwaters. Streamflows this spring and summer are forecast to be a little above average on the Yaak River, a little below average on the Fisher River, and a little above average on the main stem of the Kootenai River.

KOOTENAI at Libby Dam (1,2)	APR-JUL	3470	8280	5447	111	4450	7650	1845
	APR-JUL	6470	7120	7690	111	8080	8970	8403
FISHER at Libby	APR-JUL	173	201	236	96	251	281	340
	APR-JUL	194	270	243	96	270	301	294
YAAK at Troy	APR-JUL	150	460	314	103	340	650	494
	APR-JUL	410	481	531	103	581	650	517
KOOTENAI at Lemhi (1,2)	APR-JUL	8610	7410	5970	109	8170	8150	7940
	APR-JUL	7400	8020	9180	109	8600	8790	8461

* 20%, 30%, 50%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1981 base period.

- (1) - The values listed under the 10% and 50% Chance of Exceeding are actually 10 and 50% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->						
		CHANCE OF EXCEEDING *-----						
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
KOOTENAI bl Libby Dam (1,2)	APR-JUL	5470	6240	6560	111	6890	7650	5885
	APR-SEP	6420	7320	7690	111	8080	8970	6903
FISHER nr Libby	APR-JUL	173	205	230	96	255	285	240
	APR-SEP	184	220	245	96	270	305	256
YAAK nr Troy	APR-JUL	390	460	510	103	560	630	494
	APR-SEP	410	485	535	103	585	660	517
KOOTENAI at Leonia (1,2)	APR-JUL	6610	7410	7970	109	8530	9320	7340
	APR-SEP	7600	8520	9160	109	9800	10700	8441

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
LAKE KOOCANUSA	5748.0	1450.0	1372.0	1786.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	28	111	112
KOOTENAI MAINTSTEM in MT	29	106	102
TOBACCO	5	102	105
FISHER	6	99	90
YAAK	10	105	104
KOOTENAI in MT	36	106	102
KOOTENAI ab Bonners Ferry	64	108	105

FLATHEAD RIVER BASIN

March mountain precipitation was about 70 percent of average over the drainage. Snowpack percentages are a little lower than last month but are still near average in most watersheds except for the Jocko and Little Bitterroot. Generally, snowpack decreases from north to south. Storage in both irrigation and larger multipurpose reservoirs is a little above average. Spring and summer streamflows are forecast to be near or a little above average on the major tributaries to the Flathead River.

AT FLATHEAD at Columbia Falls	APR-JUL	1560	1700	1890	106	1900	2040	1791
	APR-SEP	1720	1870	1980	103	2090	2240	1880
AT FLATHEAD at West Glacier	APR-JUL	1780	1700	1790	102	1880	2020	1610
	APR-SEP	1650	1810	1920	103	2020	2160	1816
AT FLATHEAD at Columbia Fm (1.2)	APR-JUL	1710	1880	2120	100	2320	2510	2110
	APR-SEP	1870	2010	2180	101	2670	2790	2248
FLATHEAD at Columbia Falls (2)	APR-JUL	4730	3370	4470	106	5230	5850	3621
	APR-SEP	5140	3860	4770	103	4700	5400	4114
FLAT at Bigfork	APR-JUL	310	360	395	100	470	480	397
	APR-SEP	385	440	480	100	570	575	431
FLATHEAD at Polson (1.7)	APR-JUL	5670	6430	6500	102	7170	7940	5588
	APR-SEP	6730	6960	7100	102	7700	8430	7130

100%, 90%, 80%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chances of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->							
	----- CHANCE OF EXCEEDING *-----							
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
NF FLATHEAD nr Columbia Falls	APR-JUL	1560	1700	1800	106	1900	2040	1701
	APR-SEP	1720	1870	1980	105	2090	2240	1880
MF FLATHEAD nr West Glacier	APR-JUL	1560	1700	1790	107	1880	2020	1680
	APR-SEP	1660	1820	1920	105	2020	2180	1836
SF FLATHEAD nr Columbia Fls (1,2)	APR-JUL	1710	1960	2120	100	2280	2530	2110
	APR-SEP	1820	2050	2260	101	2470	2700	2248
FLATHEAD at Columbia Falls (2)	APR-JUL	4720	5520	5870	104	6220	6800	5621
	APR-SEP	5140	5840	6270	103	6700	7400	6114
SWAN nr Bigfork	APR-JUL	510	560	595	100	630	680	597
	APR-SEP	585	640	680	100	720	775	683
FLATHEAD nr Polson (1,2)	APR-JUL	5470	6430	6800	103	7170	7990	6586
	APR-SEP	5930	6900	7300	102	7700	8650	7150

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
CAMAS (4)	45.2	26.4	9.9	23.8
MISSION VALLEY (8)	100.0	50.0	27.8	41.3
HUNGRY HORSE	3451.0	2168.0	1128.0	2098.0
FLATHEAD LAKE	1791.0	802.9	675.0	753.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
NORTH FORK FLATHEAD	16	108	107
MIDDLE FORK FLATHEAD	12	113	109
SOUTH FORK FLATHEAD	12	91	98
STILLWATER-WHITEFISH	9	100	96
SWAN	12	90	96
MISSION VALLEY	5	101	98
LITTLE BITTERROOT-ASHLEY	10	69	75
JOCKO	5	77	81
FLATHEAD	56	97	100

UPPER CLARK FORK RIVER BASIN

Mountain precipitation was about 85 percent of average for March. Currently, snowpacks are about 15 percent below average in most drainages and similar to those reported a month ago. Reservoir storage is above average. Streamflows are expected to be 15 to 25 percent less than average with northern watersheds forecast to produce a little higher percentage runoff than southern drainages. The Surface Water Supply Index (SWSI) is -1.1 for the Clark Fork River above the Blackfoot River, +0.3 for the Blackfoot River and -0.3 for the Clark Fork River above Missoula.

STATION AND FLOW CONDITION (cfs)	APR-JUN	175	185	195	205	215	225	235
	APR-JUN	175	177	205	20	240	255	272
WATER DIVISION CR at Anaconda (27)	APR-JUN	15.0	24	35	71	38	57	79
	APR-JUN	23	39	51	71	80	87	95
FLINT CR at Northern Cross (9)	APR-JUN	4.0	9.0	11.0	74	13.0	16.0	18.0
	APR-JUN	7.2	10.0	13.0	74	15.0	19.0	21.0
FLINT CR at Southern Cross (9)	APR-JUN	11	28	38	75	54	67	81
	APR-JUN	23	41	59	75	70	83	98
LONG WILLOW CR at Big Lost	APR-JUN	8.0	9.0	11.0	74	13.0	16.0	18.0
	APR-JUN	8.0	9.0	11.0	74	14.0	17.0	19.0
UP BEND CR at Millinery	APR-JUN	42	51	52	84	69	74	89
	APR-JUN	66	57	64	85	71	82	77
REYNOLDS CR at Flax	APR-JUN	10.0	14.0	17.0	83	30	27	21
	APR-JUN	11.0	15.0	18.0	84	21	24	22
BLACKFOOT at Bonanza	APR-JUN	590	640	710	81	760	840	874
	APR-JUN	660	740	795	87	890	930	989
CLARK FORK at Millers	APR-JUN	600	625	610	87	605	620	703
	APR-JUN	655	605	705	87	605	645	812
CLARK FORK at Missoula	APR-JUN	945	1170	1079	84	1070	1700	1577
	APR-JUN	1000	1330	1000	81	1070	1320	1781

* 20%, 30%, 40%, and 50% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1981 base period.

(27) - The values listed under the 10% and 50% chances of exceeding are actually the 50% and 10% recurrence levels.

(9) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->							
		CHANCE OF EXCEEDING *----							
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
MOULTON RES inflow (million gal.)	APR-JUN	116	158	186	80	215	255	233	
	APR-JUL	124	172	205	80	240	285	257	
WARM SPRINGS CK nr Anaconda (2)	APR-JUL	19.0	24	28	72	32	37	39	
	APR-SEP	23	30	35	71	40	47	49	
FLINT CK nr Southern Cross (2)	APR-JUL	6.0	9.0	11.0	74	13.0	16.0	14.8	
	APR-SEP	7.2	10.8	13.2	74	15.6	19.2	17.8	
FLINT CK bl Boulder Ck	APR-JUL	25	38	46	75	54	67	61	
	APR-SEP	33	48	59	76	70	85	78	
LOWER WILLOW CK RES inflow	APR-JUL	6.0	9.0	11.5	74	13.0	16.0	14.9	
	APR-SEP	6.6	9.7	11.9	75	14.1	17.2	15.8	
MF ROCK CK nr Philipsburg	APR-JUL	42	51	58	84	65	74	69	
	APR-SEP	46	57	64	83	71	82	77	
NEVADA CK nr Finn	APR-JUL	10.0	14.0	17.4	83	20	25	21	
	APR-SEP	11.0	15.0	18.4	84	21	26	22	
BLACKFOOT nr Bonner	APR-JUL	590	660	710	81	760	830	874	
	APR-SEP	660	740	795	82	850	930	969	
CLARK FORK ab Milltown	APR-JUL	400	525	610	87	695	820	703	
	APR-SEP	465	605	705	87	805	945	812	
CLARK FORK ab Missoula	APR-JUL	945	1170	1320	84	1470	1700	1577	
	APR-SEP	1080	1330	1500	84	1670	1920	1781	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
GEORGETOWN LAKE	31.0	27.2	25.7	24.4
LOWER WILLOW CREEK	4.9	4.2	1.5	2.2
NEVADA CREEK	12.6	8.7	3.9	7.5

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
CLARK FORK ab FLINT CREEK	29	93	87
FLINT CREEK	14	90	86
ROCK CREEK	5	92	87
CLARK FORK ab BLACKFOOT	46	91	86
BLACKFOOT	22	79	84
UPPER CLARK FORK	64	87	85

BITTERROOT RIVER BASIN

Water supply conditions deteriorated during the past month. Snowpacks are currently 15 to 20 percent below average. March mountain precipitation was about 65 percent of average for the basin. Como Reservoir storage is a little above average while Painted Rocks Reservoir is still near empty. Forecasts of spring and summer streamflows range from 10 to 20 percent less than average with better runoff expected from higher elevation basins. The Surface Water Supply Index (SWSI) is -1.5 for the Bitterroot River.

WF BITTERROOT AT COMO (3)	APR-JUL	81	104	118	81	131	154	167
	APR-SEP	75	115	115	80	131	175	189
BITTERROOT AT DARY	APR-JUL	111	100	105	86	100	103	124
	APR-SEP	100	110	113	89	120	110	171
ROCK CR AT DARY (1)	APR-JUL	66	65	72	70	78	81	85
	APR-SEP	68	75	78	80	82	91	94
SEALFORD CR AT DARY (2)	APR-JUL	35	38	41	31	44	47	48
	APR-SEP	40	44	47	34	50	52	56
HUNT FORD CR AT DARYVILLE (7)	APR-JUL	17.8	21	25	81	56	51	50
	APR-SEP	20	25	29	81	51	50	50
BITTERROOT AT MISCANIE	APR-JUL	785	980	1120	82	1301	1450	1571
	APR-SEP	825	1070	1210	81	1350	1570	1687

* 10%, 50%, 80%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volume in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 80% Chance of Exceeding are actually 3% and 51% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->							
	CHANCE OF EXCEEDING *---							
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
WF BITTERROOT nr Conner (2)	APR-JUL	84	105	119	81	133	154	147
	APR-SEP	95	119	135	80	151	175	169
BITTERROOT nr Darby	APR-JUL	315	390	440	84	490	565	524
	APR-SEP	340	420	475	83	530	610	573
ROCK CK nr Darby (2)	APR-JUL	56	66	72	90	78	88	80
	APR-SEP	60	70	76	90	82	92	84
SKALKAHO CK nr Hamilton	APR-JUL	35	38	41	85	44	47	48
	APR-SEP	40	44	47	84	50	55	56
BURNT FORK CK nr Stevensville (2)	APR-JUL	17.0	22	25	83	28	33	30
	APR-SEP	20	25	29	81	33	38	36
BITTERROOT at Missoula	APR-JUL	795	990	1120	82	1250	1450	1371
	APR-SEP	855	1070	1210	81	1350	1570	1497

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
PAINTED ROCKS LAKE	31.7	1.0	0.0	15.7
COMO	34.9	18.0	17.7	15.5

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
WEST FORK BITTERROOT	9	82	81
EAST SIDE BITTERROOT	7	89	85
WEST SIDE BITTERROOT	9	89	84
BITTERROOT	25	87	83

LOWER CLARK FORK RIVER BASIN

The mountain precipitation was about 65 percent of average for March. Snowpack conditions declined a little during the past month. Presently, snow across the Lower Clark Fork watersheds is about 10 percent less than average. Spring and summer streamflow is forecast to be about 15 percent below average on the Clark Fork above the Flathead River. The Flathead System should produce near average runoff. Smaller tributary streams flowing into the Clark Fork are expected to have runoff near to a little below average. The Surface Water Supply Index (SWSI) is -0.7 for the Clark Fork River below the Bitterroot River.

CLARK FORK at Bitterroot	APR-70	70	110	130	84	1470	1300	1377
	APR-72	1080	1720	1500	84	1670	1920	1781
CLARK FORK at Missoula	APR-70	1640	2220	2440	81	2030	2040	2018
	APR-72	2060	2300	2110	81	2060	2170	2076
CLARK FORK at St. Regis	APR-70	7470	1040	1240	81	1340	1040	1094
	APR-72	1770	1770	1630	81	1960	1900	1821
CLARK FORK at Plains	APR-70	3147	3530	19300	84	10900	11000	10810
	APR-72	28700	2500	11000	84	11000	12000	11810
THOMPSON at Thompson Falls	APR-70	142	100	210	85	230	240	217
	APR-72	183	230	240	85	280	295	250
THOMPSON at Thompson Falls	APR-70	70	100	120	84	110	111	107
	APR-72	84	111	111	84	142	142	137
CLARK FORK at Whitehouse Spgs. (1)	APR-70	8940	10400	11400	84	12400	11700	12130
	APR-72	9400	11000	12000	84	13000	12100	12570

* 80%, 70%, 60%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1983 base period.

- (1) - The values listed under the 10% and 50% chance of exceeding are actually 24 and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->								
	----- CHANCE OF EXCEEDING *-----								
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
CLARK FORK ab Missoula	APR-JUL	945	1170	1320	84	1470	1700	1577	
	APR-SEP	1080	1330	1500	84	1670	1920	1781	
CLARK FORK bl Missoula	APR-JUL	1860	2250	2440	83	2630	3040	2948	
	APR-SEP	2060	2500	2710	83	2920	3370	3276	
CLARK FORK at St. Regis (1)	APR-JUL	2490	3040	3290	84	3540	4050	3894	
	APR-SEP	2770	3370	3650	84	3940	4500	4325	
CLARK FORK nr Plains (1,2)	APR-JUL	8140	9550	10200	94	10900	12300	10850	
	APR-SEP	8950	10500	11200	94	11900	13500	11930	
THOMPSON nr Thompson Falls	APR-JUL	162	190	210	95	230	260	222	
	APR-SEP	185	220	240	96	260	295	250	
PROSPECT CK at Thompson Falls	APR-JUL	90	108	120	94	132	151	128	
	APR-SEP	96	116	129	94	142	162	137	
CLARK FORK at Whitehorse Rpds (1,	APR-JUL	8990	10400	11400	94	12400	13700	12150	
	APR-SEP	9890	11400	12500	93	13600	15100	13370	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
NOXON RAPIDS	335.0	318.9	304.3	213.6

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
UPPER CLARK FORK	64	87	85
BITTERROOT	25	87	83
LOWER CLARK FORK	26	96	89
CLARK FORK TOTAL	107	90	87
FLATHEAD	44	101	102
PEND OREILLE	156	94	92

JEFFERSON RIVER BASIN

Mountain precipitation was about 85 percent of average across the basin for March. Snowpacks continue to be quite low over most of the drainages and vary from about 60 percent of average in portions of the Red Rock, 70 to 90 percent of average over majority of the drainages and up to about 90 percent of average in the Boulder Watershed. Storage in Lima and Clark Canyon Reservoirs continue to be well below average while Ruby River Reservoir storage is somewhat better. Spring and summer streamflows are forecast to be 20 to 35 percent less than average from most drainages. The Surface Water Supply Index (SWSI) is -3.1 for the Beaverhead River, -2.0 for the Ruby River, -2.2 for the Big Hole River, -0.3 for the Boulder River and -2.2 for the Jefferson River.

BEAVERHEAD RIVER near Summit (1)	APR-JUL	21	88	76	36	124	101	108
	APR-SEP	41	76	113	82	130	106	176
BEAVERHEAD RIVER near Cascade (2)	APR-JUL	51	100	134	70	168	100	192
	APR-SEP	56	126	154	70	174	133	234
RUBY RIVER near Ruby	APR-JUL	48	86	76	38	88	84	88
	APR-SEP	54	71	87	38	92	112	106
BIG HOLE RIVER near Wallace	APR-JUL	140	183	201	72	243	212	296
	APR-SEP	175	273	263	72	213	708	727
BOULDER RIVER near Boulder	APR-JUL	48	67	30	34	86	112	71
	APR-SEP	58	74	37	40	130	100	97
WILLOW CREEK near Hamilton	APR-JUL	7.7	12.3	15.3	23	18.7	23	24.3
	APR-SEP	9.0	14.0	18.0	23	21	24	21
JEFFERSON RIVER near Three Forks	APR-JUL	170	603	740	31	880	1000	1040
	APR-SEP	210	645	800	37	910	1110	1130

* 50%, 70%, 90%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1992 base period.

(2) - The value is natural flow - actual flow, may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->							
		----- CHANCE OF EXCEEDING *-----							
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
RED ROCK RIVER near Monida (2)	APR-JUL	33	53	66	63	79	99	105	
	APR-SEP	33	56	71	62	86	109	114	
BEAVERHEAD RIVER near Grant (2)	APR-JUL	21	66	96	64	126	171	149	
	APR-SEP	21	76	113	65	150	205	174	
BEAVERHEAD RIVER at Barratts (2)	APR-JUL	51	100	134	70	168	220	192	
	APR-SEP	56	116	156	70	196	255	224	
RUBY RIVER near Alder	APR-JUL	46	60	70	79	80	94	89	
	APR-SEP	54	71	83	78	95	112	106	
BIG HOLE RIVER near Melrose	APR-JUL	340	435	500	72	565	660	696	
	APR-SEP	370	475	545	72	615	720	757	
BOULDER RIVER near Boulder	APR-JUL	48	67	80	88	93	112	91	
	APR-SEP	54	74	87	90	100	120	97	
WILLOW CREEK near Harrison	APR-JUL	7.7	12.3	15.5	83	18.7	23	18.7	
	APR-SEP	9.0	14.0	18.0	83	21	26	21	
JEFFERSON RIVER near Three Forks	APR-JUL	390	600	740	71	880	1090	1042	
	APR-SEP	410	645	800	69	955	1190	1156	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
LIMA	84.0	22.8	13.2	39.1
CLARK CANYON	255.6	101.3	115.6	152.7
RUBY RIVER	38.8	29.8	29.8	31.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
BEAVERHEAD	36	69	73
RUBY	15	83	78
BIGHOLE	30	87	81
BOULDER	15	98	92
JEFFERSON	78	79	79

MADISON RIVER BASIN

March mountain precipitation was only about 55 percent of average. Snowpack percentages dropped during the month and are now about 80 percent of average. Reservoir storage is a little above average in Hebgen Lake and a little below in Ennis Lake. Forecasts of spring and summer streamflows are for about about 20 percent less water than normally occurs. The Surface Water Supply Index (SWSI) is -1.6 for the Madison River.

0.50g, 0.75g, 0.90g, and 1.00g chances of exceeding are the probabilities that the stream flow will exceed the volumes in the table.

The stream flow is computed for the 1961-1981 base period.

(4) The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE	(CUMULATIVE)			
	USABLE CAPACITY	THIS YEAR	LAST YEAR	Avg.
ENNIS LAKE	41.5	29.3	30.5	32.7
HEBGEN LAKE	177.5	158.5	166.5	164.5

DATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. CROSSINGS	THIS YEAR AS A % OF	
		Avg. 5	LAST 10. AVERAGE
MADISON above HEBGEN	15	61	78
LOWER MADISON	25	72	82
MADISON	30	71	80

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->						
		----- CHANCE OF EXCEEDING *-----						
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
MADISON RIVER near Grayling (2)	APR-JUL	260	290	310	79	330	360	390
	APR-SEP	345	380	405	81	430	465	499
MADISON RIVER near McAllister (2)	APR-JUL	465	520	555	82	590	645	680
	APR-SEP	600	665	705	82	745	810	856

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
ENNIS LAKE	41.0	29.7	30.8	33.7
HEBGEN LAKE	377.5	258.6	264.5	241.1

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
MADISON above HEBGEN	15	63	78
LOWER MADISON	22	82	82
MADISON	36	73	80

GALLATIN RIVER BASIN

Mountain precipitation was about 70 percent of average during March. Currently, snowpacks are about 15 percent less than average. Storage in Middle Creek Reservoir is a little above average. Spring and summer runoff is expected to be about 85 percent of average from most watersheds. The Surface Water Supply Index is -1.5 for the Gallatin River.

GALLATIN RIVER near Salmon	APR-JUL	325	350	390	25	470	480	420
	APR-SEP	325	410	410	25	580	530	540
MIDDLE CREEK near Salmon	APR-JUL	24.5	18.2	32	24	24	23	18
	APR-SEP	18.0	27	25	24	27	22	24
MIDDLE CREEK near Salmon (2)	APR-JUL	28	28	28	20	21	31	28
	APR-SEP	28	28	27	20	28	43	44
GALLATIN RIVER at Salmon	APR-JUL	305	380	445	24	520	595	524
	APR-SEP	375	440	500	26	580	545	610

* 50%, 70%, 80%, and 90% chances of exceeding are the probabilities that the actual flow will exceed the volume in the table.

The storage is compared for the 1961-1971 base period.

(1) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR	STORAGE (1000 AF)			
	YEARLY CAPACITY	THIS YEAR	LAST YEAR	AVE.
MIDDLE CREEK	2.0	1.4	4.1	7.3

WATERSHED SNOWPACK STATISTICS			
WATERSHED	NO. GAGES	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
MIDDLE CREEK	15	70	80
MIDDLE CREEK	15	100	60
GALLATIN	25	90	85

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->								
	CHANCE OF EXCEEDING *-----								
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
GALLATIN RIVER near Gateway	APR-JUL	320	360	390	85	420	460	460	
	APR-SEP	385	430	460	85	490	535	540	
E & W FK. HYALITE CR. nr Bozeman	APR-JUL	14.0	18.0	21	88	24	28	24	
	APR-SEP	16.0	21	24	86	27	32	28	
HYALITE CREEK near Bozeman (2)	APR-JUL	25	29	32	84	35	39	38	
	APR-SEP	29	34	37	84	40	45	44	
GALLATIN RIVER at Logan	APR-JUL	305	390	445	84	500	585	528	
	APR-SEP	375	460	520	84	580	665	616	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
MIDDLE CREEK	8.0	4.6	4.3	3.9

WATERSHED SNOWPACK ANALYSIS			
WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
UPPER GALLATIN	15	96	86
EAST GALLATIN	13	103	86
GALLATIN	25	96	85

MAINSTEM MISSOURI RIVER BASIN

March mountain precipitation was a little below average. Snowpack in the Missouri River Headwaters is below average but near to a little below average in the headwaters of small streams that flow into the Missouri River. Storage in Canyon Ferry and Fort Peck Reservoirs is well below average. During spring and summer, runoff into Canyon Ferry Reservoir is expected to be about 20 percent below average. Smaller streams flowing into the Missouri River below Canyon Ferry Reservoir should have near to a little above average flows. The Surface Water Supply Index (SWSI) is -1.8 for the Missouri River above Canyon Ferry Reservoir.

THICKLY PACKED SAND or Classy	APR-JUL	1.0	19.0	22	30	31	41	74
	APR-SEP	1.0	22	30	41	32	45	74
MISSOURI RIVER at Kansas Dam (2)	APR-JUL	420	495	541	523	575	550	540
	APR-SEP	470	541	590	518	551	530	540
MISSOURI RIVER at Fort Benton (2)	APR-JUL	1800	1940	2140	20	2670	2780	2670
	APR-SEP	2010	2170	2210	20	2340	2350	2340
MISSOURI RIVER near Shelby (2)	APR-JUL	345	430	505	508	540	770	678
	APR-SEP	415	450	510	508	540	805	561
MISSOURI RIVER at Virgelle (2)	APR-JUL	2320	2370	2770	24	3150	3710	3360
	APR-SEP	2310	2370	2710	25	3000	3760	3600
MISSOURI RIVER near Lusk (2)	APR-JUL	2620	2620	2710	26	3700	3700	3620
	APR-SEP	2700	2700	2800	26	3700	3700	3600
MISSOURI RIVER below Fort Peck (1)	APR-JUL	2330	2330	2620	26	3070	3040	3100
	APR-SEP	2550	2590	2720	26	3180	3090	3090
LAKE SAGINAW below (2)	APR-JUL	6460	7460	9460	22	10460	11000	11000
	APR-SEP	7200	8300	10700	21	12000	12500	12700

* 90%, 70%, 50%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1990 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->							
		----- CHANCE OF EXCEEDING *-----							
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
MISSOURI RIVER at Toston (2)	APR-JUL	1220	1370	1730	77	2120	2270	2250	
	APR-SEP	1400	1580	2000	77	2430	2620	2590	
PRICKLY PEAR CREEK nr Clancy	APR-JUL	9.0	19.0	25	96	31	41	26	
	APR-SEP	13.0	23	30	97	37	48	31	
SUN RIVER at Gibson Dam (2)	APR-JUL	420	495	545	110	595	670	494	
	APR-SEP	470	545	600	111	655	730	542	
MISSOURI RIVER at Fort Benton (2)	APR-JUL	1800	2080	2780	80	3470	3780	3470	
	APR-SEP	2070	2390	3210	80	3990	4350	3990	
MARIAS RIVER near Shelby (2)	APR-JUL	395	430	505	106	690	770	478	
	APR-SEP	415	450	530	106	720	805	501	
MISSOURI RIVER at Virgelle (2)	APR-JUL	2220	2570	3370	85	4320	4710	3960	
	APR-SEP	2520	2930	3810	85	4910	5360	4500	
MISSOURI RIVER near Landusky (2)	APR-JUL	2410	2800	3710	86	4740	5220	4310	
	APR-SEP	2740	3190	4220	86	5390	5930	4900	
MISSOURI RIVER below Fort Peck (2)	APR-JUL	2300	2730	3660	86	4770	5240	4260	
	APR-SEP	2590	3070	4120	86	5380	5900	4800	
LAKE SAKAKAWEA Inflow (2)	APR-JUL	6490	7480	9680	88	12100	13100	11000	
	APR-SEP	7200	8300	10700	88	13400	14500	12200	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
CANYON FERRY LAKE	2043.0	1354.0	1273.0	1502.0
HELENA VALLEY	9.2	2.8	3.8	4.5
LAKE HELENA	10.4	10.9	10.9	10.0
HAUSER & HELENA	61.9	63.1	63.0	60.6
HOLTER LAKE	81.9	81.0	78.1	65.0
FORT PECK LAKE (MAF)	18.9	11.2	12.3	15.1

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
MISSOURI HEADWATERS	122	79	80
WEST SIDE MISSOURI	12	99	97
SMITH-BELT	11	104	95
MAINSTEM MISSOURI	23	101	96
SUN-TETON-MARIAS	16	113	108
JUDITH-MUSSELSHELL	20	114	100
MISSOURI above FORT PECK	166	87	86
MILK RIVER	12	110	99
MISSOURI in MONTANA	175	87	86
MISSOURI blw YELLOWSTONE	289	91	88

SMITH-JUDITH-MUSSELSHELL RIVER BASINS

Snowpacks continue to be near average over the drainage as a result of March precipitation that was about 90 percent of average. The Snowy Mountains continue to show above average snowpack. Storage in irrigation reservoirs is below average in most reservoirs except for above average in storage in Martinsdale Reservoir. Runoff during the spring and summer months is forecast to be near average. The Surface Water Supply Index (SWSI) is +1.1 for the Smith River and +0.1 for the Musselshell River.

SMITH RIVER at Ft. Logan	400-450	35	25	70	100	50	100	50
	400-450	40	30	65	100	50	100	50
SPRING CREEK at White Sulphur Spg	400-450	15	10	70	100	50	100	50
	400-450	20	15	65	100	50	100	50
N.F. MUSSELSHELL near Delphina	400-450	1.1	0.8	1.4	90	1.0	0.7	1.4
	400-450	0.8	0.7	0.7	90	0.9	0.6	1.4
N.F. MUSSELSHELL above Martinsdale Res.	400-450	10	10	35	80	55	45	50
	400-450	10	10	30	70	50	40	50

10%, 50%, 90%, and 100% chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1970 time period.

(a) The value is normal; flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->						
		CHANCE OF EXCEEDING *-----						
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
SMITH RIVER nr Ft. Logan	APR-JUL	36	56	70	103	84	104	68
	APR-SEP	47	69	83	104	98	119	80
SHEEP CREEK nr White Sulphur Sprg	APR-JUL	17.1	18.8	20	106	21	23	18.8
	APR-SEP	20	22	23	105	24	26	22
N.F. MUSSELSHELL near Delphine	APR-JUL	4.1	4.9	5.4	96	5.9	6.7	5.6
	APR-SEP	4.8	5.7	6.3	98	6.9	7.8	6.4
S.F. MUSSELSHELL above Martinsdale	APR-JUL	27	44	56	98	68	85	57
	APR-SEP	30	48	60	98	72	90	61

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
SMITH RIVER	10.6	4.6	2.8	7.8
NEWLAN CREEK	12.4	8.7	7.2	8.9
BAIR	7.0	3.8	1.2	4.9
MARTINSDALE	23.1	16.3	0.3	10.2
DEADMAN'S BASIN	72.2	37.0	20.1	52.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
SMITH-BELT	11	104	95
JUDITH-MUSSELSHELL	20	114	100

SUN-TETON-MARIAS RIVER BASINS

March mountain precipitation was about 60 percent of average. Snowpacks declined a little but are still near to a little above average. Storage in irrigation reservoirs is generally near to above average. Spring and summer streamflows are forecast to be 5 to 10 percent above average on most streams. The Surface Water Supply Index (SWSI) is +2.7 for the Sun River and +2.8 for the Marias River.

		704	704	704	704	704	704	704
		(KAL/STAT)	(KAL/STAT)	(KAL/STAT)	(KAL/STAT)	(KAL/STAT)	(KAL/STAT)	(KAL/STAT)
SUN RIVER at Libby Dam (1)	APR-JUL	420	420	345	110	315	470	420
	APR-SEP	420	420	345	110	315	470	420
TWO MOUNTAIN CREEK near Browning	APR-JUL	121	110	140	100	170	110	121
	APR-SEP	121	110	140	100	170	110	121
SANDY CREEK near Browning (2)	APR-JUL	82	121	112	110	133	134	100
	APR-SEP	82	120	112	110	130	133	100
WHITE MOUNTAIN RIVER at Browning	APR-JUL	45	45	77	110	90	100	70
	APR-SEP	45	77	91	111	104	123	80
EMERY CREEK near Valley	APR-JUL	11.2	14.7	22	114	17	32	14.7
	APR-SEP	11.2	14.5	22	114	16	31	14.7
OTZ RIVER CREEK at Fort Rank	APR-JUL	3	47	57	101	107	120	42
	APR-SEP	3	96	101	107	110	121	100
MARIAS RIVER near Browning (1)	APR-JUL	315	420	315	110	405	770	420
	APR-SEP	315	420	315	110	720	803	401

* 704, 704, 704, and 101 chances of exceeding are the probabilities that the actual flow will exceed the values in the table.

The average is computed for the 1961-1983 time period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->							
	----- CHANCE OF EXCEEDING *-----							
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)
SUN RIVER at Gibson Dam (2)	APR-JUL	420	495	545	110	595	670	494
	APR-SEP	470	545	600	111	655	730	542
TWO MEDICINE CREEK near Browning	APR-JUL	167	210	240	108	270	315	222
	APR-SEP	183	225	255	109	285	325	235
BADGER CREEK near Browning (2)	APR-JUL	82	104	118	110	133	154	107
	APR-SEP	97	120	135	110	150	173	123
SWIFT RESERVOIR INFLOW nr Dupuyer	APR-JUL	45	64	77	110	90	109	70
	APR-SEP	59	78	91	111	104	123	82
DUPUYER CREEK near Valier	APR-JUL	2.1	12.7	20	118	27	38	16.9
	APR-SEP	3.2	14.4	22	118	30	41	18.7
CUT BANK CREEK at Cut Bank	APR-JUL	73	87	97	105	107	121	92
	APR-SEP	85	98	107	107	116	129	100
MARIAS RIVER near Shelby (2)	APR-JUL	395	430	505	106	690	770	478
	APR-SEP	415	450	530	106	720	805	501

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
GIBSON	99.1	60.2	38.2	48.9
PISHKUN	32.0	18.3	19.9	18.7
WILLOW CREEK	32.2	30.9	24.4	22.0
LOWER TWO MEDICINE LAKE	11.9	12.0	11.9	9.0
FOUR HORNS LAKE	19.2	13.2	14.0	12.4
SWIFT	30.0	19.0	14.7	16.4
LAKE FRANCES	112.0	92.2	45.6	69.6
LAKE ELWELL (TIBER)	1347.0	743.6	701.8	572.2

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
SUN-TETON	9	107	104
MARIAS	7	117	111
SUN-TETON-MARIAS	16	113	108

ST. MARY and MILK RIVER BASINS

Mountain precipitation was about 15 percent below average over the basin. However, in the Bear Paw Mountains, March precipitation was near to a little above average. Snowpacks are a little below average in the Bear Paw Mountains and near to a little above average in other watersheds. Irrigation reservoir storage is above average. Forecasts of spring and summer streamflows are expected to be near average on the St. Mary and Milk Rivers. The Surface Water Supply Index (SWSI) is +1.5 for the Milk River (USBR Project water users).

MILK RIVER at Southern Crossing	475-505	10	51	70	90	94	101	73
MILK RIVER at Southern Crossing (1940-1971)	700	240	230	103	263	754	230	

* 5%, 10%, 50%, and 95% chances of exceeding are the probabilities that the actual flow will exceed the volume in the table.

The average is computed for the 1961-1981 base period.

101 - The value is natural flow - actual flow may be affected by upstream water management.

WATERSHED	RESERVOIR STORAGE (1000AF)		** DAMPLE STORAGE **		
	CHANCE	THIS YEAR	LAST YEAR	AVE.	
BEAR PAW MOUNTAINS	94.8	97.7	91.2	92.3	
ST. MARY	127.0	91.1	98.2	92.3	
MILK RIVER	9.2	1.2	1.2	2.3	
ST. MARY and MILK	94.8	97.7	91.2	92.3	

WATERSHED CUMULATIVE ANALYSIS			
WATERSHED	NO. CATCHMENTS	THIS YEAR AS A % OF	
		LAST YR.	AVERAGE
MILK WATERSHEDS	5	110	101
BEAR PAW	7	111	92
MILK RIVER	12	110	90
ST. MARY	8	110	104
ST. MARY and MILK	16	111	102
BOY RIVER in ALBERTA	21	112	106
FOURMAN RIVER in ALBERTA	9	111	105

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->							
	----- CHANCE OF EXCEEDING *-----							
	FCST	90%	70%	50%	50%	30%	10%	25YR
PERIOD	(KAF)	(KAF)	(KAF)	%AVG	(KAF)	(KAF)	(KAF)	(KAF)
SWIFTCURRENT CREEK at Sherburne (	APR-JUL	95	105	111	101	118	127	110
	APR-SEP	116	124	130	102	136	144	128
ST. MARY RIVER near Babb (2)	APR-JUL	345	385	410	101	435	475	404
	APR-SEP	415	455	485	102	515	555	474
MILK RIVER at Eastern Crossing	APR-SEP	56	61	70	96	93	103	73
MILK RIVER at Eastern Crossing (2)	APR-SEP	235	240	250	105	265	270	239

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
LAKE SHERBURNE	64.3	37.7	21.2	23.3
FRESNO	127.0	91.4	32.2	77.3
BEAVER CREEK	3.5	3.1	1.2	2.3
NELSON	66.8	39.9	8.3	36.6

WATERSHED SNOWPACK ANALYSIS			
WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
MILK HEADWATERS	5	110	101
BEAR PAW	7	111	92
MILK RIVER	12	110	99
ST. MARY	8	110	104
ST. MARY and MILK	14	111	102
BOW RIVER in ALBERTA	21	117	128
OLDMAN RIVER in ALBERTA	9	111	122

UPPER YELLOWSTONE RIVER BASIN

March mountain precipitation was about 65 percent of average. Most watersheds have snowpacks that are 10 to 15 percent below average. Cooney Reservoir storage is above average. Spring and summer streamflows are expected to be 5 to 10 percent lower than average for most drainages. The Surface Water Supply Index (SWSI) is -1.3 for the Yellowstone River above Livingston, -0.7 for the Shields River, -0.8 for the Boulder River, -0.1 for the Stillwater River, -1.1 for the Clarks Fork River, -1.0 for the Rock-Red Lodge Creek and -1.0 for the Yellowstone River above the Bighorn River.

STREAMFLOW FORECASTS

FORECAST POINT	FCST PERIOD	<---DRIER--- FUTURE --WETTER--->							
		----- CHANCE OF EXCEEDING *-----							
		90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
YELLOWSTONE at Lake Outlet	APR-JUL	390	445	480	81	515	570	590	
	APR-SEP	545	615	665	81	715	785	818	
YELLOWSTONE at Corwin Springs	APR-JUL	1240	1370	1460	88	1550	1680	1650	
	APR-SEP	1490	1650	1750	88	1860	2010	2000	
YELLOWSTONE at Livingston	APR-JUL	1460	1610	1710	89	1810	1960	1920	
	APR-SEP	1770	1940	2060	88	2180	2350	2330	
SHIELDS RIVER near Livingston	APR-JUL	71	118	150	89	182	230	168	
	APR-SEP	84	132	165	88	198	245	187	
BOULDER RIVER at Big Timber	APR-JUL	265	310	340	96	370	415	353	
	APR-SEP	290	340	370	96	400	450	384	
WEST ROSEBUD CREEK near Roscoe	APR-JUL	46	53	58	91	63	70	64	
	APR-SEP	62	70	75	90	80	88	83	
STILLWATER RIVER nr Absarokee (2)	APR-JUL	360	435	485	93	535	610	524	
	APR-SEP	455	530	580	93	630	705	625	
CLARKS FORK RIVER near Belfry	APR-JUL	380	435	470	87	505	565	540	
	APR-SEP	435	490	525	87	560	615	603	
RED LODGE CREEK near Boyd (2)	APR-JUL	16.0	31	42	86	53	68	49	
	APR-SEP	26	41	52	87	63	78	60	
YELLOWSTONE RIVER at Billings (2)	APR-JUL	2810	2990	3400	91	3810	3960	3740	
	APR-SEP	3310	3530	4000	91	4500	4670	4410	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
MYSTIC LAKE	21.0	1.0	1.1	3.6
COONEY	27.4	21.4	21.2	15.9

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	26	81	85
SHIELDS	10	88	83
BOULDER-STILLWATER	12	99	92
CLARK'S FORK-ROCK CREEK	20	83	83
YELLOWSTONE above BIGHORN	60	87	85

LOWER YELLOWSTONE RIVER BASIN

During March, mountain precipitation was about 80 percent of average. Snowpacks in the Upper Yellowstone and Bighorn drainages are below average but near to a little above average in the Bighorn Mountains with the higher percentages in the north end of the range. Storage in Tongue River Reservoir is near average. Runoff this spring and summer is expected to be below average on the Bighorn and Yellowstone Rivers, near average on the Powder River and above average on the Little Bighorn and Tongue Rivers. The Surface Water Supply Index (SWSI) is +1.6 for the Little Bighorn River and +1.1 for the Tongue River.

STREAMFLOW FORECASTS

FORECAST POINT	<---DRIER--- FUTURE --WETTER--->								
	----- CHANCE OF EXCEEDING *-----								
	FCST PERIOD	90% (KAF)	70% (KAF)	50% (KAF)	50% %AVG	30% (KAF)	10% (KAF)	25YR (KAF)	
YELLOWSTONE RIVER at Billings (2)	APR-JUL	2810	2990	3400	91	3810	3960	3740	
	APR-SEP	3310	3530	4000	91	4500	4670	4410	
BIG HORN RIVER nr St. Xavier (2)	APR-JUL	865	1020	1390	80	1760	1940	1730	
	APR-SEP	960	1130	1540	80	1960	2150	1920	
LITTLE BIGHORN at Hardin	APR-JUL	86	108	158	107	220	250	148	
	APR-SEP	97	122	178	107	250	280	167	
TONGUE RIVER near Decker (2)	APR-JUL	131	174	280	116	375	415	242	
	APR-SEP	141	189	300	115	405	450	262	
YELLOWSTONE RIVER at Miles City (	APR-JUL	3780	4170	5130	91	6090	6490	5640	
	APR-SEP	4360	4820	5900	91	7030	7490	6510	
POWDER RIVER near Locate	APR-JUL	97	147	265	95	390	440	278	
	APR-SEP	106	160	295	98	425	480	302	
YELLOWSTONE RIVER near Sidney (2)	APR-JUL	4010	4510	5630	90	6820	7320	6260	
	APR-SEP	4610	5180	6500	90	7850	8420	7200	

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

RESERVOIR STORAGE

(1000AF)

RESERVOIR	USABLE CAPACITY	** USABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
BIGHORN LAKE	1356.0	705.4	650.6	670.0
TONGUE RIVER	68.0	35.8	39.3	37.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
BIG HORN (Wyoming)	60	97	90
LITTLE BIGHORN	5	141	113
TONGUE RIVER (Wyoming)	15	143	107
POWDER RIVER (Wyoming)	14	139	100
YELLOWSTONE RIVER	130	97	89

